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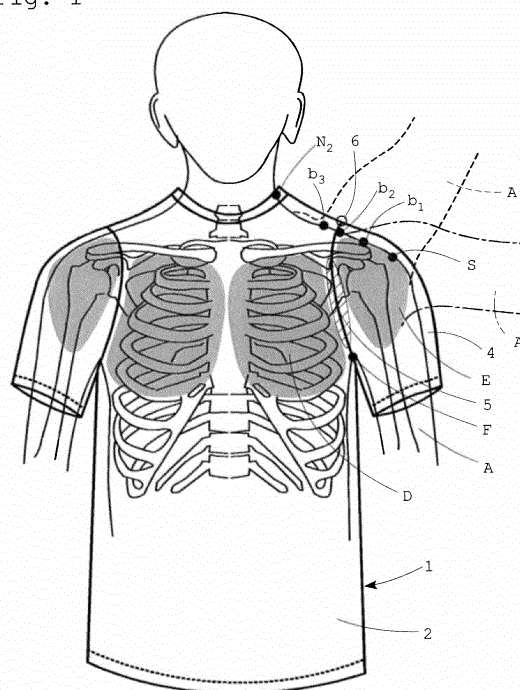
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(54) **UPPER GARMENT**

(57) The present invention has an object to provide an upper garment that prevents sleeves from dropping and a garment body from unnecessarily largely moving, is less likely to lose its shape, and can provide a comfortable wear feeling, even during strenuous exercise such as sports, particularly, when the arm is raised or rotated. A sleeve peak point 6 of an armhole 5 is located between: a trapezius muscle stop point b_1 on a shoulder ridge line L of a wearer in an arm A lowered state; and a trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in an arm A raised state, whereby an arm bending point during arm raising and the armhole 5 coincide with each other. Hence, when the arm A is raised or rotated, sleeves 4 are prevented from dropping, and a garment body is prevented from unnecessarily largely moving. Further, a portion of the armhole 5 on a front garment body 2 side is designed to pass through a deltopectoral groove between a deltoid muscle E and a pectoralis major muscle D of the wearer, whereby the upward retainability of the sleeves and the position stability of the garment body are further improved.

Fig. 1



Description

Technical Field

5 **[0001]** The present invention relates to an upper garment that is less likely to lose its shape and can provide a comfortable wear feeling even during strenuous exercise such as sports, because armhole shapes of sleeves of the upper garment are devised.

Background Art

10 **[0002]** Up to now, upper garments that are expected to provide wear feelings improved by devising sleeve shapes are disclosed in Patent Literature 1 and Patent Literature 2.

[0003] Unfortunately, these upper garments are likely to lose their shapes and cannot provide comfortable wear feelings during strenuous exercise such as sports.

15 **[0004]** A conventional upper garment 11 used for sports shirts and the like includes a front garment body 12, a back garment body 13, and sleeves 14. The sleeves 14 and the front garment body 12 are sewn to each other through armholes 15, and the sleeves 14 and the back garment body 13 are sewn to each other through the armholes 15.

[0005] Examples of the sleeves 14 having shapes standard for the conventional upper garment 11 include a set-in sleeve illustrated in Fig. 4 to Fig. 6 and a raglan sleeve illustrated in Fig. 7 to Fig. 9.

20 **[0006]** Particularly the set-in sleeve is considered as a prototype of sleeves, and is adopted for the most items.

[0007] As illustrated in Fig. 4 to Fig. 6, the set-in sleeve is designed such that a sleeve peak point 16 of an armhole 15 passes through a shoulder tip point S.

[0008] Features of the set-in sleeve are as follows.

25 1) The set-in sleeve is designed such that the wear comfort becomes best in the state where the arm is naturally lowered.

2) The set-in sleeve has a simple structure, and thus is easily suited to every design.

30 **[0009]** Next, as illustrated in Fig. 7 to Fig. 9, the raglan sleeve is obtained by developing the set-in sleeve, and is more improved in functionality.

[0010] As illustrated in Fig. 7 to Fig. 9, the raglan sleeve is designed such that a portion of an armhole 15 on the front garment body 12 side connects a front armpit point F to the front side of a neck side point N₂ and that a portion of the armhole 15 on the back garment body 13 side connects a back armpit point H to the back side of the neck side point N₂. A shoulder tip portion at a sleeve peak of the raglan sleeve is rounded.

35 **[0011]** The raglan sleeve is used particularly in the case where a portion around the shoulder is desired to be seamless, and features of the raglan sleeve are as follows.

[0012]

40 1) The raglan sleeve follows the roundness of the shoulder tip of the human body, and the sleeve edge thereof is not significantly lowered, whereby the wear comfort and the exercise performance are considered.

2) The armhole is wide, and this enables the arm to easily pass therethrough.

3) Because there is no seam around the shoulder, a seam allowance is less likely to contact the skin.

45 **[0013]** Moreover, Patent Literature 3 discloses a bicycle shirt worn by cyclists and the like, in which each armhole is formed in a special shape as illustrated in Fig. 10 and Fig. 11, in order to: cause almost no unnecessary crease even at a posture at which a wearer rides on a bicycle; and reduce stresses applied to the body of the wearer such as a stiffening feeling and a twitching feeling of the shirt.

Citation List

50

Patent Literature

[0014]

55 Patent Literature 1: Japanese Patent Laid-Open No. 2003-129316

Patent Literature 2: Japanese Utility Model No. 3064858

Patent Literature 3: Japanese Design No. 1430374

Summary of Invention

Technical Problem

[0015] In the upper garment 11 such as a shirt worn for strenuous exercise such as sports, an arm A is larger in displacement than a body trunk part B when the arm is raised or rotated. Hence, each sleeve 14 that covers the arm A large in displacement needs to have a function (upward retainability) of preventing the sleeve 14 from dropping during a motion and reducing twitches caused by contact with an arm upper part. Moreover, the garment body that covers the body trunk part A small in displacement needs to have a function (position stability) of reducing twitches caused by inward/outward or frontward/backward displacement of the garment body during a motion.

[0016] As a result of measuring a change in shape of a shoulder upper part during arm raising, as illustrated in Fig. 4 to Fig. 6, the arm A and the body trunk part B are bent around trapezius muscle stop points when the shoulder is rotated outward. Then, trapezius muscle stop points b_1 , b_2 , and b_3 as arm bending points move toward the neck side point N_2 as the shoulder is rotated outward. In the case of an average adult man, the distances from the neck side point N_2 to the trapezius muscle stop points b_1 , b_2 , and b_3 are as follows: the distance from the trapezius muscle stop point b_1 to the neck side point N_2 in an arm lowered state is 75 mm; the distance from the trapezius muscle stop point b_2 to the neck side point N_2 in a state where the arm A is raised at an angle of 90° as indicated by an alternate long and short dash line in Fig. 4 is 60 mm; and the distance from the trapezius muscle stop point b_3 to the neck side point N_2 in a state where the arm A is raised at an angle of 150° as indicated by a broken line in Fig. 4 is 45 mm. In this way, as the arm A is raised from its lowered state, the trapezius muscle stop points b_1 , b_2 , and b_3 move toward the neck side point N_2 .

[0017] Unfortunately, the conventional set-in sleeve and the conventional raglan sleeve are designed without considering the positions of the arm bending points, that is, the trapezius muscle stop points b_1 , b_2 , and b_3 when the arm A is raised or rotated.

[0018] For example, as illustrated in Fig. 4 to Fig. 6, the armhole 15 of the set-in sleeve is designed to suit the shape of the arm A from the shoulder tip point S when the arm A is naturally lowered. That is, because fitness standards are placed on a static state of the human body, the sleeve drops during arm raising, and twitches are caused by contact with the arm upper part. In this regard, the upward retainability of the sleeve is not considered.

[0019] Moreover, as illustrated in Fig. 6, the armhole 15 of the set-in sleeve is located on the outer side of a border (a region in light black) between the body trunk part B small in displacement and the arm A large in displacement. Hence, when the arm A is rotated, the garment body contacts the arm A large in displacement, and the garment body thus does not fit the body trunk part B, so that even the garment body that is originally undesired to move moves unfavorably.

[0020] Meanwhile, the raglan sleeve is designed to follow the roundness of the shoulder tip of the human body to some degree, considering wear comfort. Accordingly, although not as obviously as the set-in sleeve, the sleeve edge of the raglan sleeve faces downward. Hence, the sleeve drops during arm raising, and twitches are caused by contact with the arm upper part. In this regard, the upward retainability of the sleeve is not considered.

[0021] Moreover, as illustrated in Fig. 7 to Fig. 9, the armhole 15 of the raglan sleeve is located across the border between the body trunk part B small in displacement and the arm A large in displacement. Hence, when the arm A is rotated, the sleeve 14 contacts the arm A large in displacement, and the garment body thus does not fit the body trunk part B, so that even the garment body that is originally undesired to move moves unfavorably.

[0022] Moreover, the bicycle shirt (a product of GOLDWIN INC., in which cutting design "AERO FORM" is adopted) of Patent Literature 3 is designed considering a static motion (posture retention) such that almost no unnecessary crease is caused at a posture at which a wearer rides on a bicycle and that a stiffening feeling and a twitching feeling of the shirt are prevented. When the arm is raised or rotated, the sleeve drops, and the garment body unnecessarily largely moves.

[0023] The cause for this is as follows. As illustrated in Fig. 10 and Fig. 11, the sleeve peak point 16 of the bicycle shirt of Patent Literature 3 is also located on the outer side of the trapezius muscle stop point b_1 in an arm lowered state, similarly to general set-in sleeves. Hence, during a dynamic motion (a motion of raising or rotating the arm), it is difficult for the sleeve 14 to follow the motion of the arm, so that even the garment body that is originally undesired to move moves unfavorably.

[0024] In view of the above, the present invention has an object to provide an upper garment that prevents sleeves from dropping and a garment body from unnecessarily largely moving, is less likely to lose its shape, and can provide a comfortable wear feeling, even during strenuous exercise such as sports, particularly, when the arm is raised or rotated.

Solution to Problem

[0025] The present invention provides an upper garment including an armhole having a sleeve peak point that is located between: a trapezius muscle stop point on a shoulder ridge line of a wearer in an arm lowered state; and a trapezius muscle stop point on the shoulder ridge line of the wearer in an arm raised state.

[0026] As the arm is raised from its lowered state, the position of the trapezius muscle stop point on the shoulder ridge line moves toward a neck side point.

[0027] Accordingly, the sleeve peak point of the armhole is located between: the trapezius muscle stop point on the shoulder ridge line of the wearer in the arm lowered state; and the trapezius muscle stop point on the shoulder ridge line of the wearer in the arm raised state, whereby an arm bending point during arm raising and the armhole coincide with each other. Hence, when the arm is raised or rotated, sleeves can be prevented from dropping, and a garment body can be prevented from unnecessarily largely moving.

[0028] Further, a portion of the armhole on a front garment body side is designed to pass through a deltopectoral groove between a deltoid muscle and a pectoralis major muscle of the wearer. With this design, the armhole is located on a border between the arm part large in displacement and a body trunk part small in displacement. Hence, the upward retainability of the sleeves and the position stability of the garment body become excellent.

[0029] A lower portion of the armhole on the front garment body side is designed to pass through a front armpit point of the wearer, a portion of the armhole on a back garment body side is designed to pass through a scapular spine protruding part of the wearer, and a lower portion of the armhole on the back garment body side is designed to pass through a back armpit point of the wearer. With these designs, the armhole follows the border between the arm large in displacement and the body trunk part small in displacement. Hence, the upward retainability of the sleeves and the position stability of the garment body become more excellent.

[0030] Moreover, the portion of the armhole on the front garment body side is concaved so as to follow a concave of the deltopectoral groove between the deltoid muscle and the pectoralis major muscle of the wearer, whereby the wear feeling can be further improved.

Advantageous Effects of Invention

[0031] In an upper garment according to the present invention, an arm bending point during arm raising and an armhole coincide with each other. Hence, the upper garment is less likely to lose its shape and can provide a comfortable wear feeling even during strenuous exercise such as sports.

Brief Description of Drawings

[0032]

[Fig. 1] Fig. 1 is a front view illustrating an upper garment according to the present invention together with a skeleton view.

[Fig. 2] Fig. 2 is a back view illustrating the upper garment according to the present invention together with the skeleton view.

[Fig. 3] Fig. 3 is a partial plan view of the upper garment according to the present invention.

[Fig. 4] Fig. 4 is a front view illustrating a conventional upper garment having a set-in sleeve structure, together with a skeleton view.

[Fig. 5] Fig. 5 is a back view illustrating the conventional upper garment having the set-in sleeve structure, together with the skeleton view.

[Fig. 6] Fig. 6 is a partial plan view of the conventional upper garment having the set-in sleeve structure.

[Fig. 7] Fig. 7 is a front view illustrating a conventional upper garment having a raglan sleeve structure, together with a skeleton view.

[Fig. 8] Fig. 8 is a back view illustrating the conventional upper garment having the raglan sleeve structure, together with the skeleton view.

[Fig. 9] Fig. 9 is a partial plan view of the conventional upper garment having the raglan sleeve structure.

[Fig. 10] Fig. 10 is a front view illustrating a conventional bicycle shirt together with a skeleton view.

[Fig. 11] Fig. 11 is a back view illustrating the conventional bicycle shirt together with the skeleton view.

Description of Embodiments

[0033] An upper garment 1 according to the present invention includes a front garment body 2, a back garment body 3, and sleeves 4. The sleeves 4 and the front garment body 2 are sewn to each other through armholes 5, and the sleeves 4 and the back garment body 3 are sewn to each other through the armholes 5.

[0034] A sleeve peak point 6 of each armhole 5 in the upper garment 1 according to the present invention is located between: a trapezius muscle stop point b_1 on a shoulder ridge line L of a wearer in an arm A lowered state; and a trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in an arm A raised state (indicated by a broken line in each of Fig. 1 and Fig. 2).

[0035] As the arm A is raised from its lowered state, as illustrated in Fig. 1 and Fig. 2, the position of the trapezius muscle stop point b_1 on the shoulder ridge line L moves to b_2 and then b_3 toward a neck side point N_2 .

[0036] In Fig. 2, C denotes a trapezius muscle. Moreover, in Fig. 1, D denotes a pectoralis major muscle, E denotes a deltoid muscle, and a deltopectoral groove between the deltoid muscle E and the pectoralis major muscle D is hatched. In Fig. 1 to Fig. 3, S denotes a shoulder tip point, and N_1 denotes a neck back center point.

[0037] In the case of an average adult man, the distances from the neck side point N_2 to the trapezius muscle stop points b_1 , b_2 , and b_3 are as follows: the distance to the trapezius muscle stop point b_1 in the arm lowered state is 75 mm; the distance to the trapezius muscle stop point b_2 in a state where the arm A is raised at an angle of 90° is 60 mm; and the distance to the trapezius muscle stop point b_3 in a state where the arm A is raised at an angle of 150° is 45 mm. As the arm A is raised from its lowered state, the trapezius muscle stop points b_1 , b_2 , and b_3 move toward the neck side point N_2 .

[0038] Accordingly, in the case of designing the upper garment 1 worn by the average adult man, an allowance is set such that the sleeve peak point 6 of the armhole 5 is located within a range of 45 mm to 75 mm from the shoulder tip point S toward the neck side point N_2 .

[0039] In this way, the sleeve peak point 6 of the armhole 5 is located between: the trapezius muscle stop point b_1 on the shoulder ridge line L of the wearer in the arm A lowered state; and the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state, whereby an arm bending point during arm raising and the armhole 5 coincide with each other. Hence, when the arm A is raised or rotated, the sleeves 4 can be prevented from dropping, and the front garment body 2 and the back garment body 3 can be prevented from unnecessarily largely moving.

[0040] Then, a portion of the armhole 5 on the front garment body 2 side is designed to pass through the deltopectoral groove between the deltoid muscle E and the pectoralis major muscle D of the wearer. With this design, the armhole 5 is located on a border between the arm A large in displacement and a body trunk part B small in displacement. Hence, the upward stability of the sleeves and the position stability of the garment body become excellent.

[0041] A lower portion of the armhole 5 on the front garment body 2 side is designed to pass through a front armpit point F of the wearer, a portion of the armhole 5 on the back garment body 3 side is designed to pass through a scapular spine protruding part G of the wearer, and a lower portion of the armhole 5 on the back garment body 3 side is designed to pass through a back armpit point H of the wearer. With these designs, the armhole 5 is located on the border between the arm A large in displacement and the body trunk part B small in displacement. Hence, the upward retainability of the sleeves and the position stability of the garment body become more excellent.

[0042] Moreover, as indicated by an arrow I in Fig. 3, the portion of the armhole 5 on the front garment body 2 side is concaved so as to follow a concave of the deltopectoral groove between the deltoid muscle E and the pectoralis major muscle D of the wearer, whereby the wear feeling is further improved.

[0043] In Fig. 2, the position of the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state is closer to the neck back center point N_1 by 11% to 17% of the distance (a half of the shoulder width) between the neck back center point N_1 and the shoulder tip point S, from the trapezius muscle stop point b_1 on the shoulder ridge line L of the wearer in the arm A lowered state.

[0044] Moreover, the position of the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state is closer to the shoulder tip point S by 62% to 66% of the distance (a half of the shoulder width) between the neck back center point N_1 and the shoulder tip point S, from the neck back center point N_1 .

[0045] Accordingly, the sleeve peak point 6 of the armhole 5 in the upper garment 1 according to the present invention is located closer to the neck back center point N_1 by 11% to 17% from the trapezius muscle stop point b_1 on the shoulder ridge line L of the wearer in the arm A lowered state.

[0046] Moreover, the position of the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state, for positioning the sleeve peak point 6 of the armhole 5 in the upper garment 1 according to the present invention, may be determined to be closer to the shoulder tip point S by 62% to 66% of the distance (a half of the shoulder width) between the neck back center point N_1 and the shoulder tip point S, from the neck back center point N_1 .

[0047] Next, Table 1 shows results of measurement whose subjects are ten adult men (average height: 170.6 cm), the measurement concerning the positions of the trapezius muscle stop points and the like. Here, the average value and the standard deviation are calculated for each parameter, and "'average value - standard deviation' to 'average value + standard deviation'" is defined as the range of each parameter.

[Table 1]

Measurement Subject	Height (mm)	Half of Shoulder Width (mm)	b_1	b_3	BP Moving Amount	b_3 Position Ratio	BP Moving Ratio
A	1690	235	190	155	35	66	15

(continued)

Measurement Subject	Height (mm)	Half of Shoulder Width (mm)	b_1	b_3	BP Moving Amount	b_3 Position Ratio	BP Moving Ratio
B	1700	220	170	140	30	64	14
C	1700	220	175	135	40	61	18
D	1680	220	175	140	35	64	16
E	1760	240	185	160	25	67	10
F	1700	235	180	155	25	66	11
G	1670	210	170	135	35	64	17
H	1710	225	165	140	25	62	11
I	1720	220	170	140	30	64	14
J	1730	220	170	135	35	61	16
Average 1,706 mm			Average M	144	32	64	14
			Standard Deviation σ	9	5	2	3
			Maximum	160	40	67	18
			Minimum	135	25	61	10
			M- σ - M+ σ	135-153 mm	27-37 mm	62-66%	11-17%

[0048] In Table 1, the measurement subjects A to J are ten adult men, whose average height is 170.6 cm.

[0049] In Table 1, the half of the shoulder width means the distance between the neck back center point N_1 and the shoulder tip point S, b_1 means the distance (mm) from the neck back center point N_1 to the trapezius muscle stop point in the arm lowered state, b_3 means the distance (mm) from the neck back center point N_1 to the trapezius muscle stop point in the state where the arm is raised at the angle of 150° , the BP moving amount means the moving distance (mm) of the trapezius muscle stop point toward the inner side (toward the neck back center point N_1) from b_1 in the arm lowered state to b_3 in the state where the arm is raised at 150° , the b_3 moving ratio means the ratio (%) of the position of b_3 to the half of the shoulder width (= [the position of b_3 / the half of the shoulder width] x 100), and the BP moving ratio means the ratio (%) of the BP moving amount to the half of the shoulder width (= [the BP moving amount / the half of shoulder width] x 100).

[0050] As described above in Table 1, the "BP moving amount" means the moving distance of the "trapezius muscle stop points b_1 , b_2 , and b_3 " toward the neck back center point N_1 from the arm lowered state to the state where the arm is raised at 150° . Accordingly, the sleeve peak point 6 is set such that the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state is closer to the neck back center point N_1 by 11% to 17% of the distance between the neck back center point N_1 and the shoulder tip point S, from the trapezius muscle stop point b_1 on the shoulder ridge line L of the wearer in the arm A lowered state. In this way, the arm bending point during arm raising and the armhole can be made coincident with each other.

[0051] Moreover, from Table 1, the " b_3 position ratio" (the ratio of the "position of b_3 " to the "half of the shoulder width") is 62% to 66%. Here, the position of b_3 means the distance between the "neck back center point N_1 " and the "trapezius muscle stop point" in the state where the arm is raised at 150° . Accordingly, the sleeve peak point 6 is set such that the trapezius muscle stop point b_3 on the shoulder ridge line L of the wearer in the arm A raised state is closer to the shoulder tip point S by 62% to 66% of the distance between the neck back center point N_1 and the shoulder tip point S, from the neck back center point N_1 . Also in this way, the arm bending point during arm raising and the armhole can be made coincident with each other.

[0052] Note that, although Table 1 shows the results of the measurement whose subjects are adult men, it is considered that similar ratios are obtained for both the "BP moving ratio" and the " b_3 position ratio" even in the case where the measurement subjects are other than adult men.

Reference Signs List

[0053]

5	1	upper garment
	2	front garment body
	3	back garment body
	4	sleeve
	5	armhole
10	6	sleeve peak point
	A	arm
	B	body trunk part
	C	trapezius muscle
	D	pectoralis major muscle
15	E	deltoid muscle
	F	front armpit point
	G	scapular spine protruding part
	H	back armpit point
	I	concave
20	b ₁ , b ₂ , b ₃	trapezius muscle stop point
	N ₁	neck back center point
	N ₂	neck side point
	L	shoulder ridge line
	S	shoulder tip point

Claims

1. An upper garment comprising an armhole having a sleeve peak point that is located between: a trapezius muscle stop point on a shoulder ridge line of a wearer in an arm lowered state; and a trapezius muscle stop point on the shoulder ridge line of the wearer in an arm raised state.
2. The upper garment according to claim 1, wherein a portion of the armhole on a front garment body side passes through a deltopectoral groove between a deltoid muscle and a pectoralis major muscle of the wearer.
3. The upper garment according to claim 2, wherein a lower portion of the armhole on the front garment body side passes through a front armpit point of the wearer.
4. The upper garment according to any of claims 1 to 3, wherein a portion of the armhole on a back garment body side passes through a scapular spine protruding part of the wearer.
5. The upper garment according to claim 4, wherein a lower portion of the armhole on the back garment body side passes through a back armpit point of the wearer.
6. The upper garment according to any of claims 1 to 5, wherein the portion of the armhole on the front garment body side is concaved so as to follow a concave of the deltopectoral groove between the deltoid muscle and the pectoralis major muscle of the wearer.
7. The upper garment according to any of claims 1 to 6, wherein the sleeve peak point is positioned such that the trapezius muscle stop point on the shoulder ridge line of the wearer in the arm raised state is closer to a neck back center point by 11% to 17% of a distance between the neck back center point and a shoulder tip point, from the trapezius muscle stop point on the shoulder ridge line of the wearer in the arm lowered state.
8. The upper garment according to any of claims 1 to 6, wherein the sleeve peak point is positioned such that the trapezius muscle stop point on the shoulder ridge line of the wearer in the arm raised state is closer to a shoulder tip point by 62% to 66% of a distance between a neck back center point and the shoulder tip point, from the neck back center point.

Fig. 1

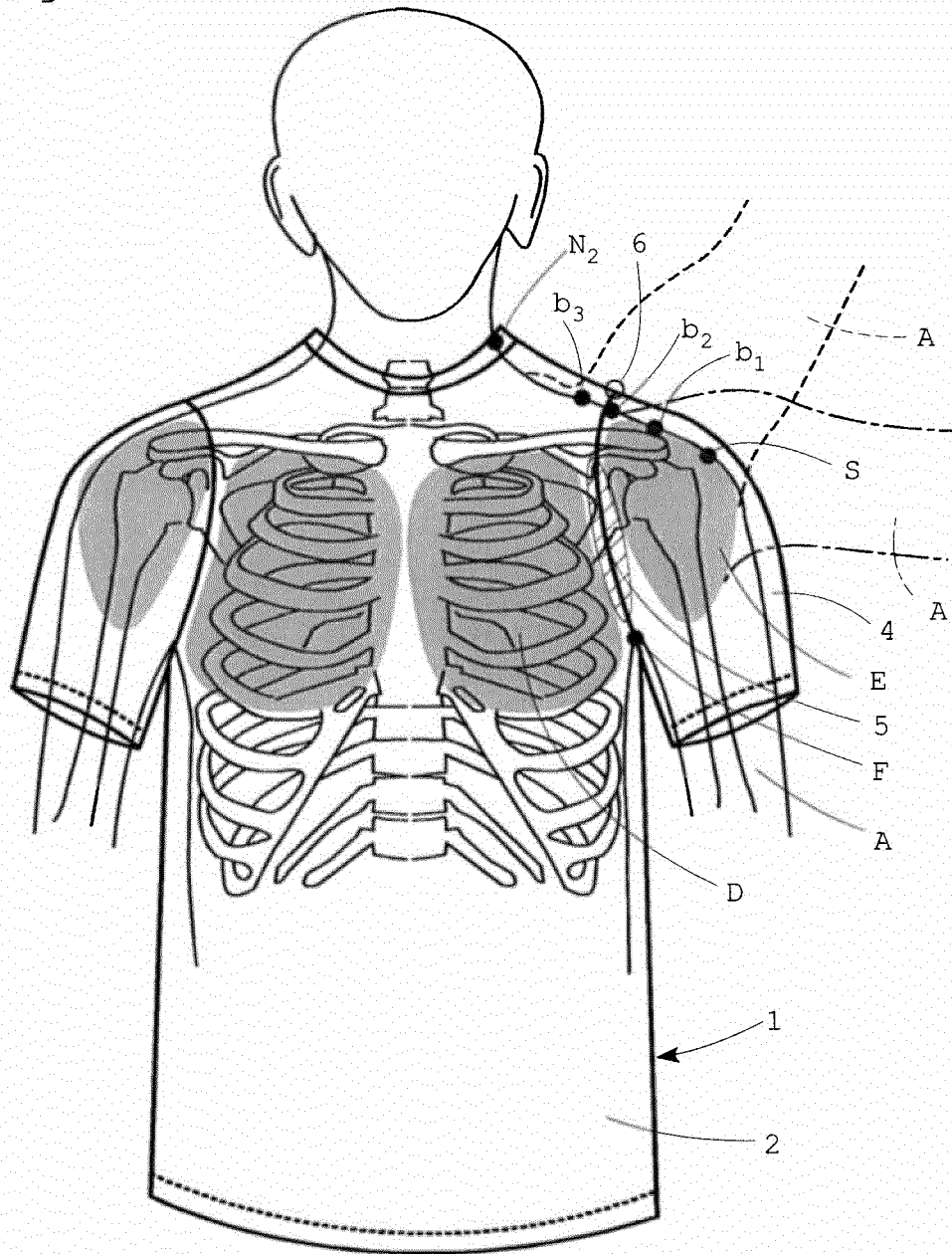


Fig. 2

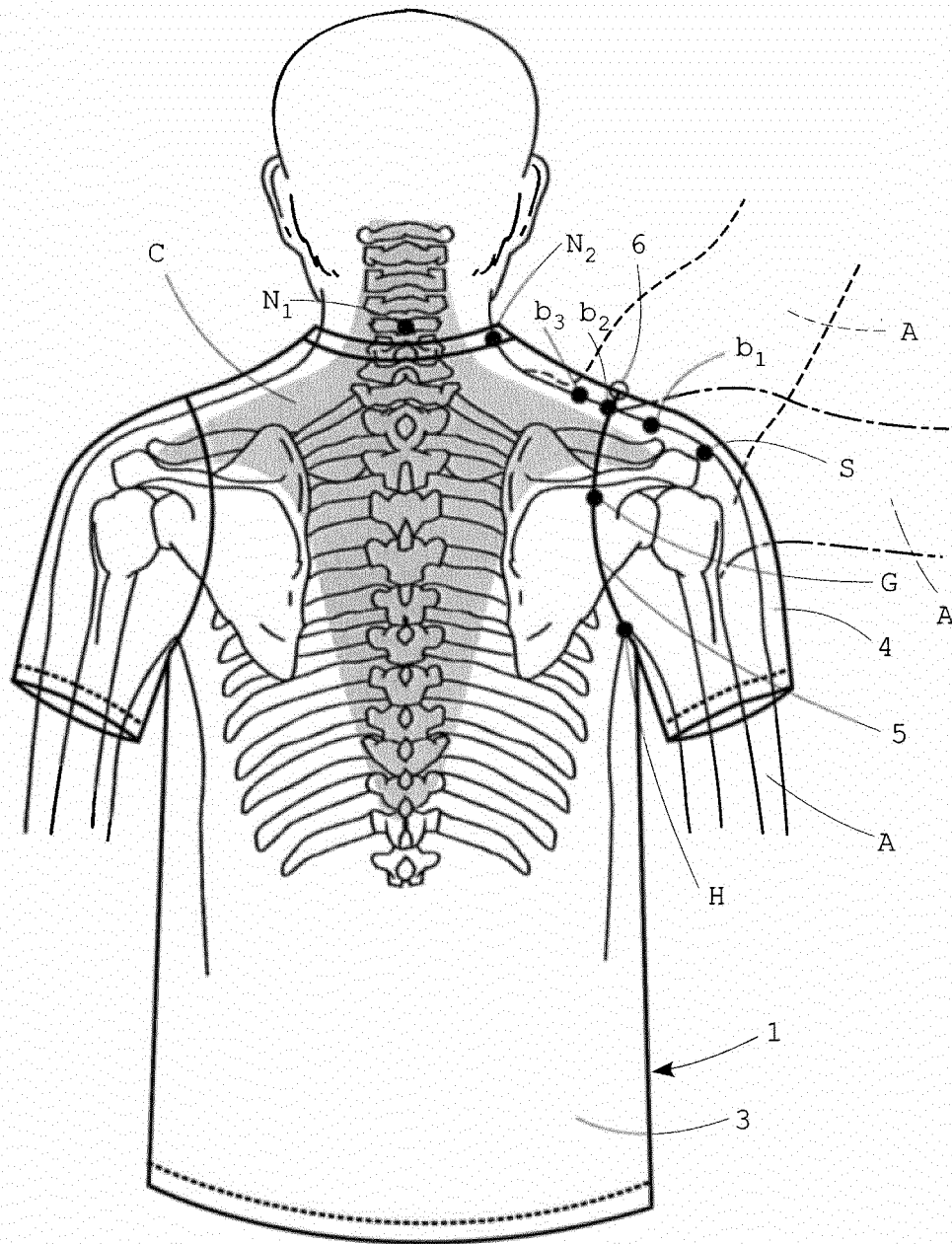


Fig. 3

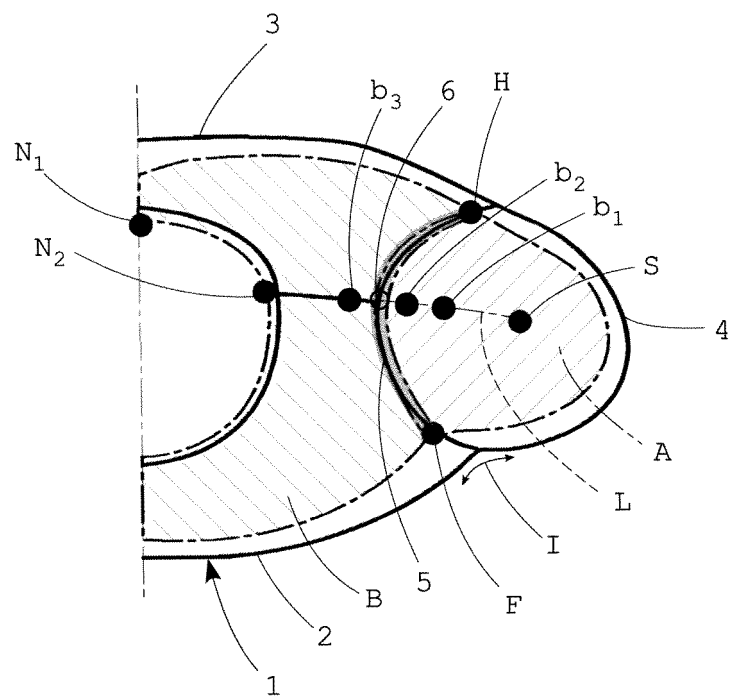


Fig. 4

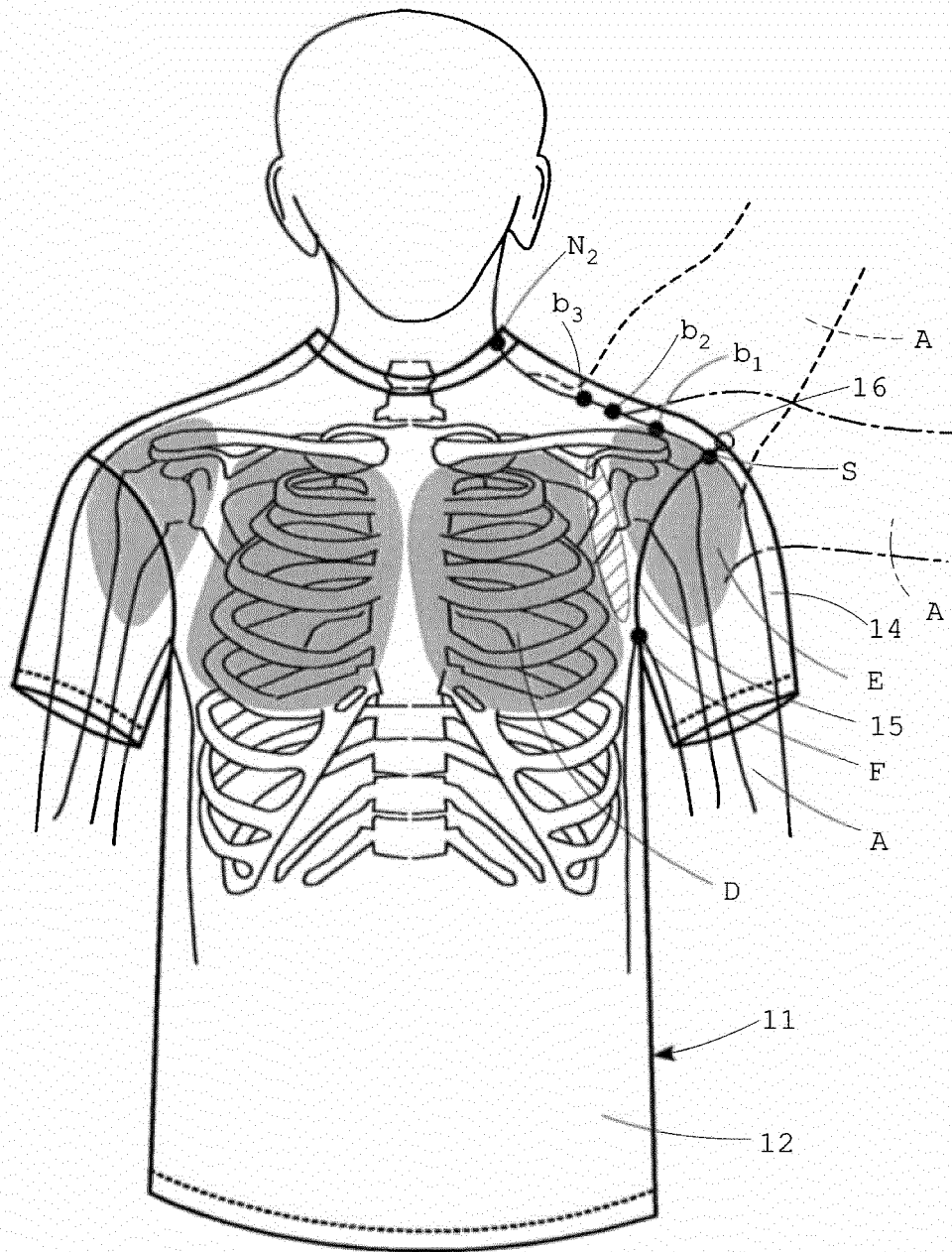


Fig. 5

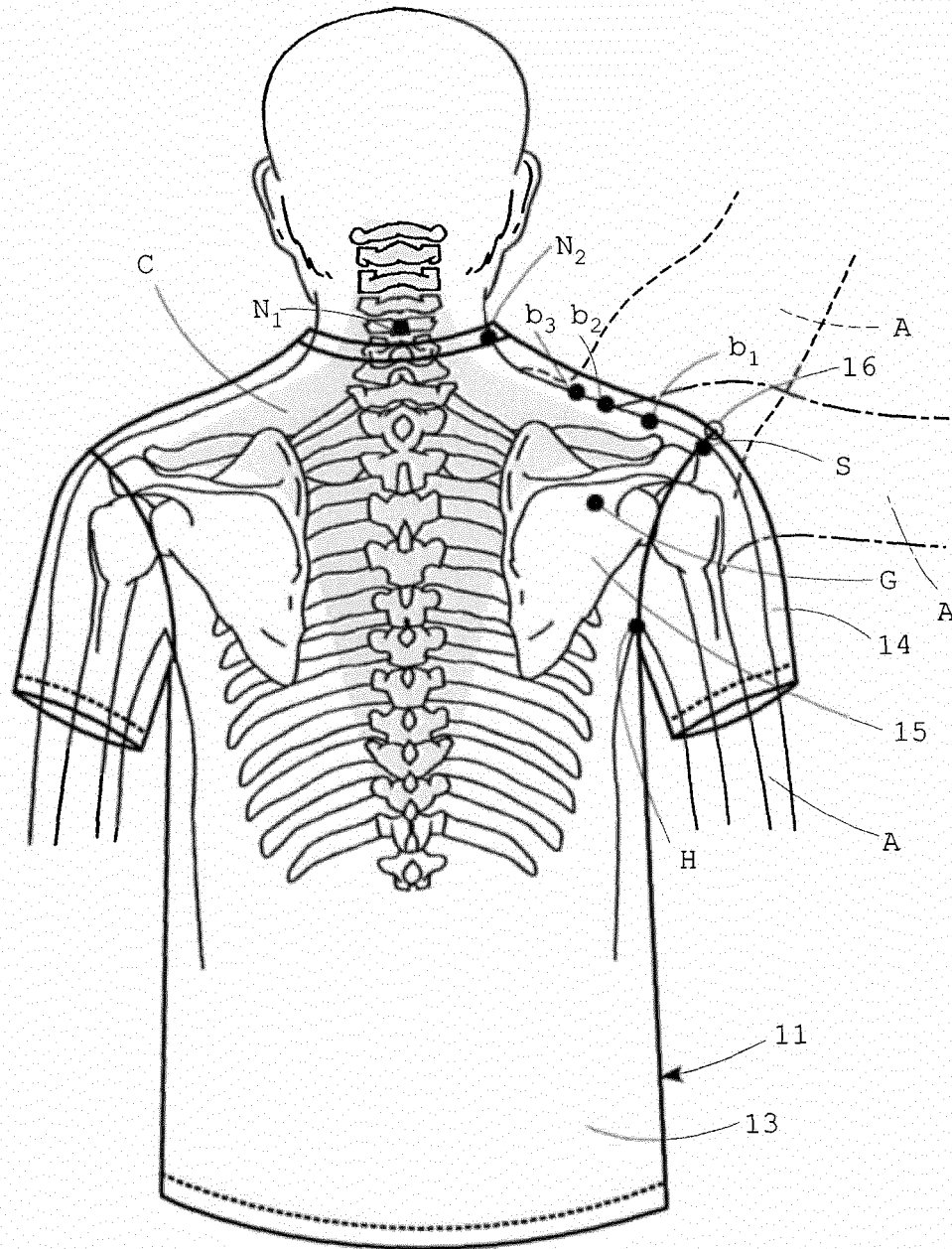


Fig. 6

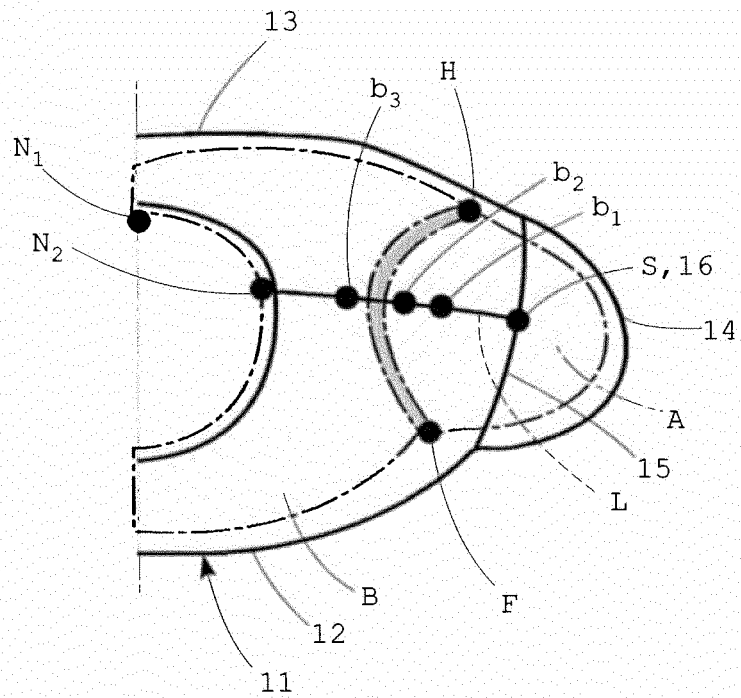


Fig. 7

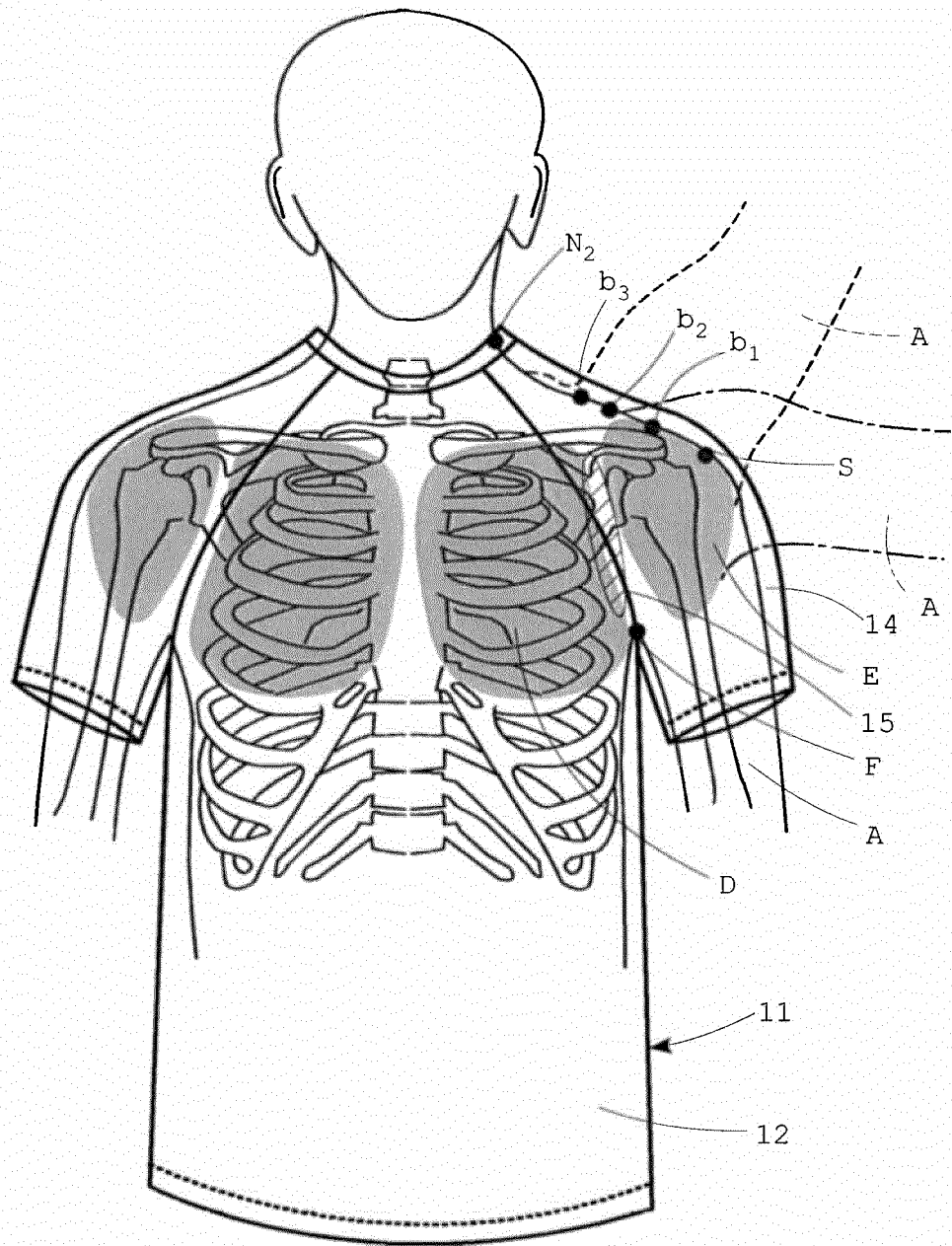


Fig. 8

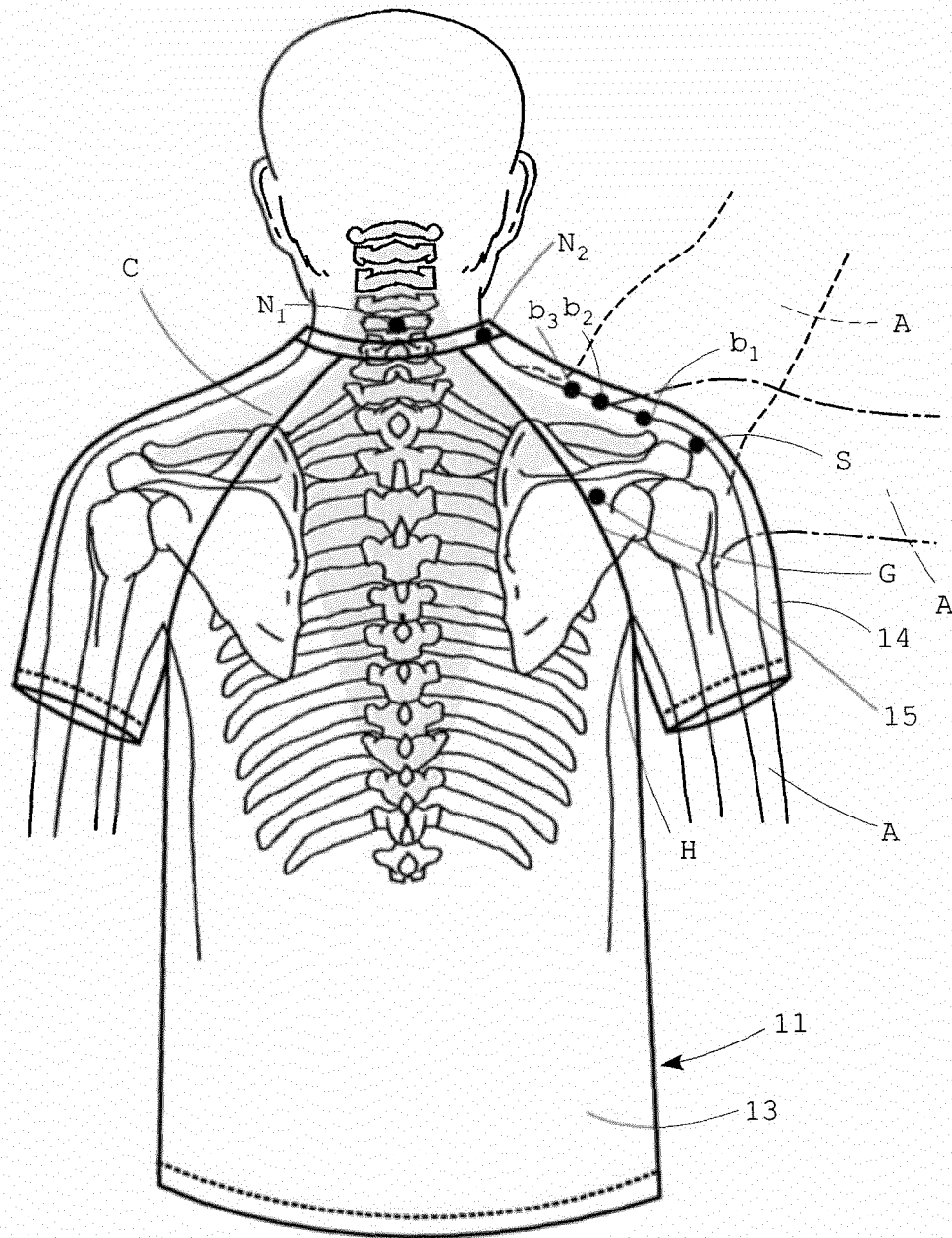


Fig. 9

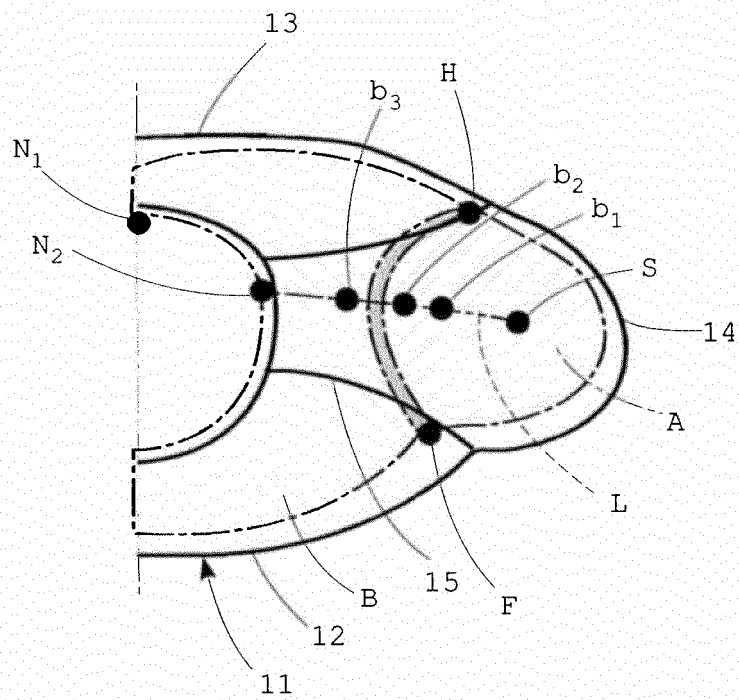


Fig. 10

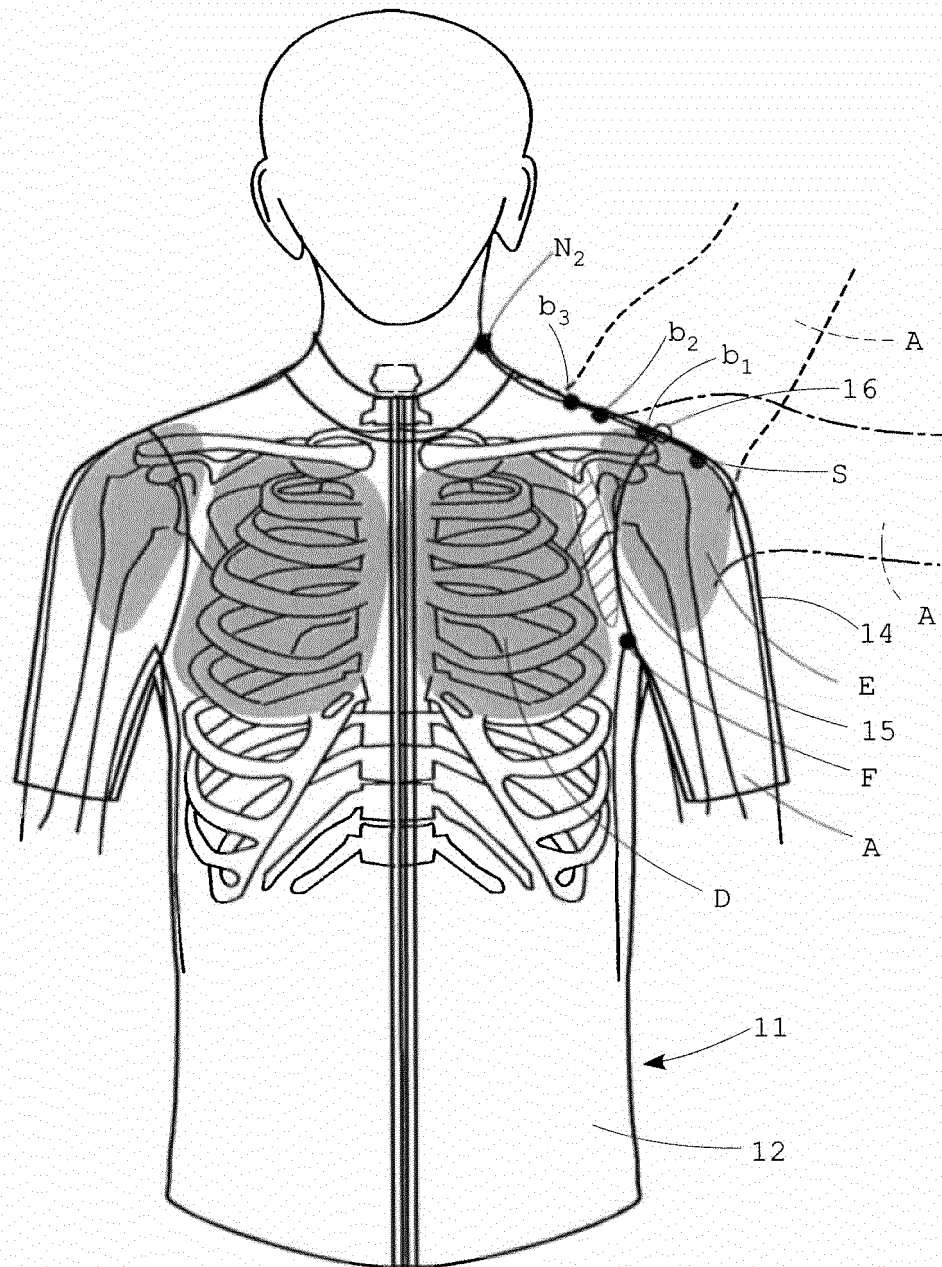
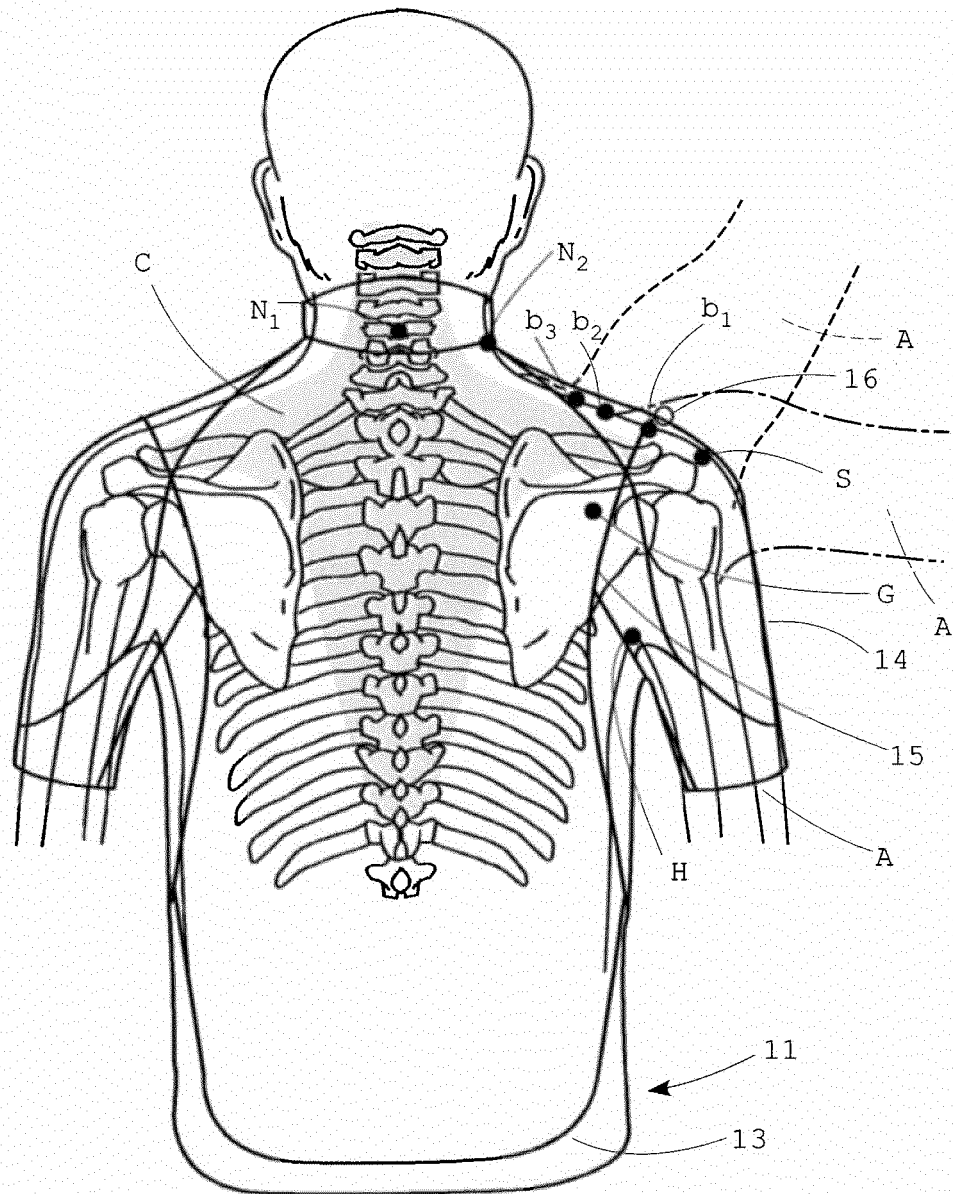


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/066508

A. CLASSIFICATION OF SUBJECT MATTER

A41D27/10 (2006.01) i, A41D13/00 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A41D27/10, A41D13/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2012

Kokai Jitsuyo Shinan Koho 1971-2012 Toroku Jitsuyo Shinan Koho 1994-2012

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2011-179148 A (Gunze Ltd.), 15 September 2011 (15.09.2011), entire text; all drawings (Family: none)	1-8
A	JP 2011-214184 A (Gunze Ltd.), 27 October 2011 (27.10.2011), entire text; all drawings (Family: none)	1-8
A	JP 2002-088543 A (Mizuno Inc.), 27 March 2002 (27.03.2002), entire text; all drawings (Family: none)	1-8

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search
23 August, 2012 (23.08.12)Date of mailing of the international search report
04 September, 2012 (04.09.12)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/066508

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2006-291399 A (Wacoal Holdings Corp.), 26 October 2006 (26.10.2006), entire text; all drawings (Family: none)	1-8
A	JP 11-061530 A (Mizuno Inc.), 05 March 1999 (05.03.1999), entire text; all drawings (Family: none)	1-8

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2003129316 A [0014]
- JP 3064858 B [0014]
- JP 1430374 A [0014]